

**REMARKS/ARGUMENTS**

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-15 are presently active. Claims 1-4, 8-10, and 13-14 have been presently amended. No new matter has been added.

In the outstanding Office Action, Claims 1, 3, 8, 9, 10, 11, 12, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Shiomi et al. (U.S. Pat. No. 5,844,252). Claims 1, 2, 8, 11, 12, 13, 14, and 15 were rejected under 35 U.S.C. § 102(b) as being anticipated by Yamazaki (U.S. Pat. No. 5,089,802). Claims 2, 4, 13, and 14 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi in view of Yamazaki. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al. and Yamazaki et al. in view of Malinski et al. (U.S. Pat. No. 5,603,820). Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Shiomi et al. and Malinski et al. in view of Buttery et al. (U.S. Pat. No. 5,405,618). Claims 3, 4, 9, and 10 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki in view of Shiomi et al. Claims 5 and 6 were rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki and Shiomi et al. in view of Malinski et al. Claim 7 was rejected under 35 U.S.C. § 103(a) as being obvious over Yamazaki, Shiomi et al., and Malinski et al. in view of Buttery et al.

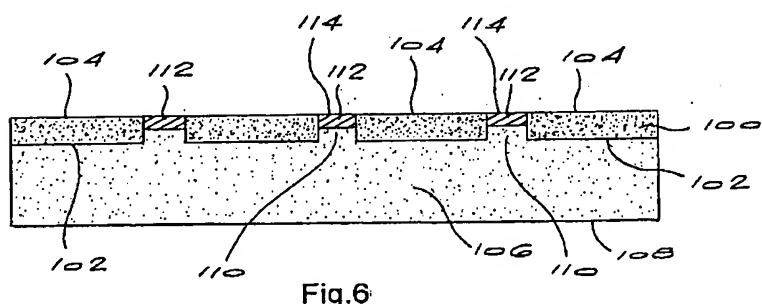
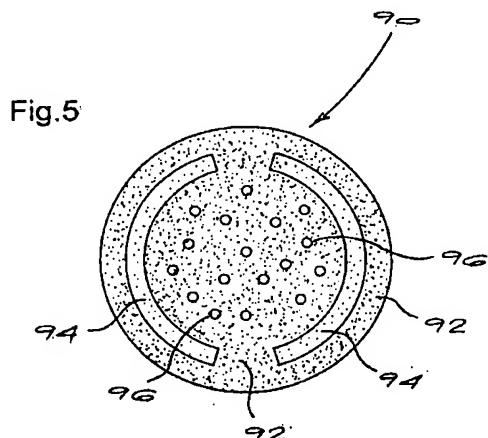
Applicants acknowledge with appreciation the courtesy of Examiner Dieterle and Primary Examiner Olsen to interview this application with Applicants' representative on March 10, 2010, during which time the issues in the outstanding Office Action were discussed as substantially summarized on the Interview Summary Sheet and as noted below.

No decision on patentability was reached during the interview.

In an effort to expedite prosecution of this application, Claim 1 has been clarified to define:

1. A microelectrode comprising:  
an electrically conducting diamond layer;  
a non-conducting diamond layer formed from electrically non-conducting diamond;  
one or more pins or projections of electrically conducting diamond extending at least partially through the non-conducting diamond layer, the pins presenting areas of electrically conducting diamond; and  
a contact surface or surfaces on a back side of the electrically conducting diamond layer for connection to an external circuit.

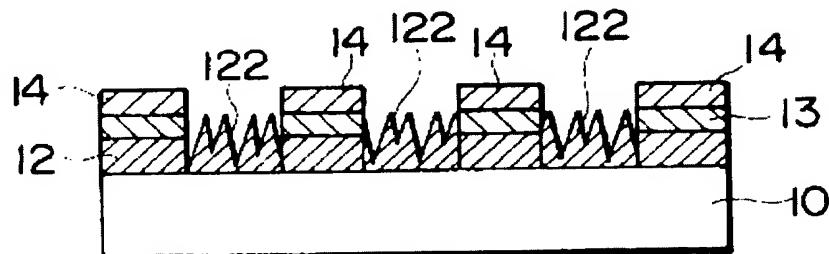
Support for these clarifications is found illustratively in Applicants' specification at pages 12 and 13, and in Applicants' Figures 5 and 6 (reproduced below for the sake of convenience):



Regarding Shiomii et al., as discussed during the interview, the device of Shiomii et al. is a field emission device designed to emit electrons. The Office Action points to the device

of Figure 2, particularly Figure 2D, the fabrication of which is described in Example 1.

Figure 2D of Shiomi is reproduced below:



As stated in Shiomi et al., boron doped diamond layer 12 has a thickness of  $1 \mu\text{m}$ .

Un-doped diamond layer 13 has a thickness of  $1 \mu\text{m}$ . See Shiomi et al. col. 6, lines 64-66.

These two layers are etched to “mean etching depth” of  $1.2 \mu\text{m}$ . See Shiomi et al. col. 7, line 25. This etching then removes all of the un-doped diamond layer 13. Shiomi et al. describe that the protuberances have themselves a thickness of  $0.1 \mu\text{m}$  or less. See Shiomi et al. col. 8, lines 6-8. The Examiner will appreciate that all of the un-doped diamond layer 13 is removed so that there are no projections of electrically conducting diamond extending at least partially through the non-conducting diamond layer 13 in Shiomi et al..

As stated in the attached declaration, the device of Figure 2D starts being fabricated by depositing a layer of non-conducting diamond 13 on a layer of conducting diamond 12. An etching process is used in to Shiomi et al. to removed part of the layers 12 and 13. As attested to in the declaration, this etching process either 1) would leave areas of non-conducting diamond as projections in the openings of layer 13 or 2) if continued would leave areas of conducting diamond as projections beneath the openings of layer 13.

In either situation, the claimed element of – one or more pins or projections of electrically conducting diamond extending at least partially through the non-conducting diamond layer – would not be met by Shiomi et al.

M.P.E.P. § 2121 states:

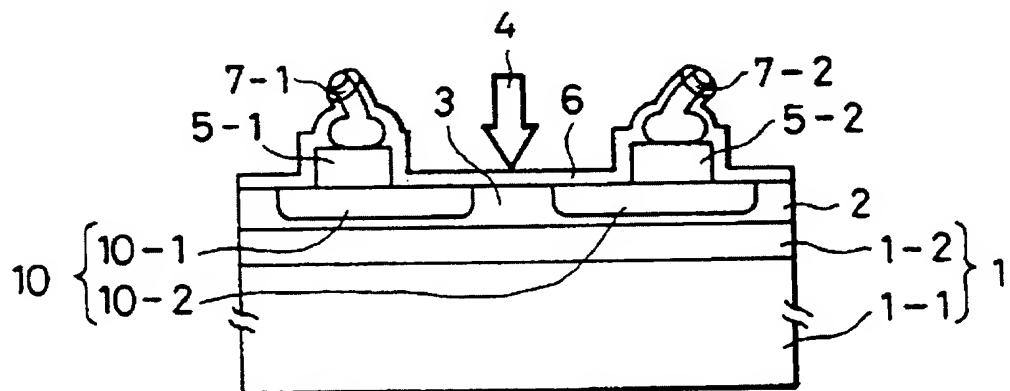
A prior art reference provides an enabling disclosure and thus anticipates a claimed invention if the reference describes the claimed invention in sufficient detail to enable a person of ordinary skill in the art to carry out the claimed invention; "proof of efficacy is not required for a prior art reference to be enabling for purposes of anticipation." *Impax Labs. Inc. v. Aventis Pharm. Inc.*, 468 F.3d 1366, 1383, 81 USPQ2d 1001, 1013 (Fed. Cir. 2006).

Accordingly, since there is no other process described in Shiomi et al. for making their field emission devices other than their etching process (which as shown above does not meet the claimed elements), the Shiomi et al. reference is not enabling for purposes of anticipation.

Hence, given these deficiencies in Shiomi et al., Claim 1 is not anticipated by Shiomi et al.

Regarding Yamazaki, the device of Yamazaki is a thermistor and is not a microelectrode. The Examiner relies on Figure 1C of Yamazaki. The device of Figure 1C shows islands of conducting diamond 10-1 and 10-2 in a layer of non-conducting diamond 2. Moreover, layer 1 of Yamazaki is a silicon nitride layer, not an electrically conducting diamond layer, as recited in Claim 1. Figure 1C of Yamazaki is reproduced below.

FIG. 1(C)



Still further, in Yamazaki, there is no contact surface (or surfaces) on a back side of an electrically conducting diamond layer for connection to an external circuit. All connections (5-1 and 5-2) in Yamazaki appear on the top side of the electrically conducting diamond layer 10-1 or 10-2.

M.P.E.P. § 2131 requires for anticipation that each and every feature of the claimed invention must be shown in as complete detail as is contained in the claim. Hence, given these deficiencies in Yamazaki, Claim 1 is not anticipated by Yamazaki.

Thus, Claim 1 and the claims dependent therefrom are believed to be in condition for allowance.

In view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413-2220  
(OSMMN 06/04)

  
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Gregory J. Maier  
Attorney of Record  
Registration No. 25,599

Ronald A. Rudder, Ph.D.  
Registration No. 45,618